

Amendments to and Listing of the Claims:

Please cancel claims 14, 17 and 47, without prejudice, amend claims 1-3, 5, 6, 8, 10, 11, 13, 18, 34-37 and 48, without prejudice, and insert new claims 49-51, all as set forth in the following listing of the claims:

1. (Currently Amended) A nucleic acid molecule encoding a fusion protein which comprises

(a) an effector module which is intracellularly cytotoxic, the effector module comprising a mistletoe lectin A chain, wherein the mistletoe lectin A chain is encoded by a nucleic acid molecule selected from the group consisting of:

(i) a nucleic acid molecule which has a nucleotide sequence encoding ~~at least a fragment of~~ a protein having the amino acid sequence SEQ ID NO: 2;
and

(ii) a nucleic acid molecule having the nucleotide sequence of ~~at least a fragment of~~ SEQ ID NO: 1;

~~(iii) a nucleic acid molecule which hybridizes with the nucleic acid molecule of (i) or (ii), the hybridization carried out using a hybridization buffer containing 0.1 x SSC and 0.1% SDS at about 65°C ; and~~

~~(iv) a nucleic acid molecule which is degenerate with respect to the nucleic acid molecule of (iii);~~

(b) a processing module which is covalently linked to the effector module and which comprises a recognition sequence for a protease, wherein the processing module comprises ~~the~~ a mistletoe lectin propeptide, and wherein the mistletoe lectin propeptide is encoded by a nucleic acid molecule selected from the group consisting of:

(i) a nucleic acid molecule which has a nucleotide sequence encoding ~~at least a fragment of a protein~~ having the amino acid sequence SEQ ID NO: 6;
and

(ii) a nucleic acid molecule having the nucleotide sequence of ~~at least a fragment of~~ SEQ ID NO: 5; and

~~(iii) a nucleic acid molecule which hybridizes with the nucleic acid molecule of (i) or (ii), the hybridization carried out using a hybridization buffer containing 0.1 x SSC and 0.1% SDS at about 50°C; and~~

~~(iv) a nucleic acid molecule which is degenerate with respect to the nucleic acid molecule of (iii); and~~

(c) a targeting module which is covalently linked to the processing module and which specifically binds to the surface of a cell, thereby mediating internalization of the fusion protein into the cell.

2. (Currently Amended) The nucleic acid molecule of claim 1, wherein the effector module possesses the biological activity of the mistletoe lectin A ~~chain and has at least one amino acid deletion, substitution, insertion, addition, or exchange with respect to the mistletoe lectin A chain.~~

3. (Currently Amended) The nucleic acid molecule according to claim 1, wherein the processing module is proteolytically cleavable ~~and has at least one amino acid deletion, substitution, insertion, addition, or exchange with respect to the mistletoe lectin propeptide.~~

4. (Original) The nucleic acid molecule of claim 1, wherein the fusion protein further comprises a modulator module which is covalently linked to one of the processing module, the effector module, and the targeting module, and wherein the modulator module modulates the intracellular cytotoxicity of the effector module.

5. (Currently Amended) The nucleic acid molecule of claim 4, wherein the modulator module is encoded by a nucleic acid molecule selected from the group consisting of:

(i) a nucleic acid molecule having a nucleotide sequence which encodes ~~at least a fragment of~~ a protein having the amino acid sequence SEQ ID NO: 4; and

(ii) a nucleic acid molecule which has the nucleotide sequence of ~~at least a fragment of~~ SEQ ID NO: 3; and

~~(iii) a nucleic acid molecule which hybridizes with the nucleic acid molecule of (i) or (ii), the hybridization carried out using a hybridization buffer containing 0.1 x SSC and 0.1% SDS at about 50°C; and~~

~~(iv) a nucleic acid molecule which is degenerate with respect to the nucleic acid molecule of (iii).~~

6. (Currently Amended) The nucleic acid molecule of claim 5, wherein the modulator module possesses the biological activity of the mistletoe lectin B chain ~~and has at least one amino acid deletion, substitution, insertion, addition, or exchange with respect to the mistletoe lectin B chain.~~

7. (Original) The nucleic acid molecule of claim 4, wherein the fusion protein further comprises an affinity module which is covalently linked to one of the effector module, the processing module, the targeting module, and the modulator module.

8. (Currently Amended) The nucleic acid molecule of claim 1, wherein the processing module is of plant origin and has an amino acid sequence selected from the group consisting of

(i) the sequence SSSEVRYWPLVIRPVIA (SEQ ID NO:37); and

~~(ii) the sequence S4 S3 S2 S1/ S1', wherein S1 is one of an arginine residue and a lysine residue, S2 is an amino acid residue selected from the group consisting of phenylalanine, tyrosine, valine, and leucine, each of S3 and S4 is any amino acid residue except proline, and S1' is any amino acid residue.~~

9. (Previously Presented) The nucleic acid molecule of claim 1, wherein the targeting module specifically recognizes a cell selected from the group consisting of a cell of the immune system, a tumor cell, and a cell of the nervous system.

10. (Currently Amended) The nucleic acid molecule of claim 9, wherein the cell of the immune system is a cell ~~that participates in acquired immunity of the specific immune~~ system.

11. (Currently Amended) The nucleic acid molecule of claim 10, wherein the cell ~~that participates in acquired immunity of the specific immune system~~ is a T cell.

12. (Original) The nucleic acid molecule of claim 11, wherein the T cell is a T_H2 cell.

13. (Currently Amended) The nucleic acid molecule of claim 9, wherein the cell of the immune system is a cell ~~that participates in innate immunity of the unspecific immune~~ system.

14. (Cancelled)

15. (Previously Presented) The nucleic acid molecule of claim 7, wherein the affinity module comprises a portion selected from the group consisting of a histidine sequence, thioredoxin, maltose-binding protein, green fluorescent protein, SEQ ID NO:39, and an 11 amino acid T7 gene leader peptide.

16. (Previously Presented) The nucleic acid molecule of claim 4, wherein the modulator module has a portion comprising one of the mistletoe lectin B chain, the peptide KDEL (SEQ ID NO:35), and the peptide HDEL (SEQ ID NO:36).

17. (Cancelled)

18. (Currently Amended) The nucleic acid molecule of claim ~~17~~16, wherein the mistletoe lectin B chain has an amino acid substitution ~~exchange is~~ selected from the group consisting of an amino acid substitution of A at position D23, substitution of A at position W38, substitution of A at position D235, and substitution of A at position Y249.

19. (Previously Presented) The nucleic acid molecule of claim 1, wherein the nucleic acid molecule is DNA.

20. (Previously Presented) The nucleic acid molecule of claim 1, wherein the nucleic acid molecule is RNA.

21. (Original) A vector comprising a nucleic acid molecule of claim 1.

22. (Previously Presented) A host which is transformed with a vector of claim 21.

23. (Original) The host of claim 22, wherein the host is a prokaryote.

24. (Original) The host of claim 23, wherein the prokaryote is selected from the group consisting of *E. coli*, *Bacillus subtilis*, and *Streptomyces coelicolor*.

25. (Original) The host of claim 22, wherein the host is a eukaryote.

26. (Previously Presented) The host of claim 25, wherein the eukaryote is selected from the group consisting of a *Saccharomyces* species, an *Aspergillus* species, a *Spodoptera* species, and *Pichia pastoris*.

27. (Original) A host which comprises a nucleic acid molecule of claim 1.

28. (Cancelled)

29. (Previously Presented) A method for producing a fusion protein, the method comprising culturing a host of claim 27 and isolating the fusion protein from the host.

30.-32. (Cancelled)

33. (Previously Presented) A kit, comprising at least one of

(a) a vector which comprises the nucleic acid molecule of claim 1; and

(b) a vector which comprises the nucleic acid molecule of claim 7; and a vector which comprises a nucleic acid molecule encoding a modulator which modulates the intracellular cytotoxicity of the effector module of (a) and/or (b).

34. (Currently Amended) A nucleic acid molecule encoding a fusion protein which comprises

(a) an effector module which is intracellularly cytotoxic, the effector module comprising one of the mistletoe lectin A chain, wherein a mistletoe lectin A chain is encoded by a nucleic acid molecule selected from the group consisting of:

(i) a nucleic acid molecules which has a nucleotide sequence encoding ~~at least a fragment of~~ a protein having the amino acid sequence SEQ ID NO: 2; and

(ii) a nucleic acid molecule which has the nucleotide sequence of at least a fragment of SEQ ID NO: 1;

~~(iii) a nucleic acid molecule which hybridizes with the nucleic acid molecule of (i) or (ii), the hybridization carried out using a hybridization buffer containing 0.1 x SSC and 0.1% SDS at about 65°C; and~~

~~(iv) a nucleic acid molecule which is degenerate with respect to the nucleic acid molecule of (iii);~~

(b) a processing module which is covalently linked to the effector module and which comprises a recognition sequence for a protease; and

(c) a targeting module which is covalently linked to the processing module and which specifically binds to the surface of a cell, thereby mediating internalization of the fusion protein into the cell.

35. (Currently Amended) The nucleic acid molecule of claim 34, wherein the processing module comprises ~~one of the~~ a mistletoe lectin propeptide having (SEQ ID NO: 6). ~~and a fragment thereof~~

36. (Currently Amended) A nucleic acid molecule encoding a fusion protein which comprises

- (a) an effector module which is intracellularly cytotoxic;
- (b) a processing module which is covalently linked to the effector module and which comprises a recognition sequence for a protease, wherein the processing module comprises ~~one of~~ a mistletoe lectin propeptide, wherein the mistletoe lectin propeptide is encoded by a nucleic acid molecule selected from the group consisting of:
 - (i) a nucleic acid molecule which has a nucleotide sequence encoding ~~at least a fragment of~~ a protein having the amino acid sequence SEQ ID NO: 6; and
 - (ii) a nucleic acid molecule which has the nucleotide sequence of ~~at least a fragment of~~ SEQ ID NO: 5; and
 - ~~(iii) a nucleic acid molecule which hybridizes with the nucleic acid molecule of (i) or (ii), the hybridization carried out using a hybridization buffer containing 0.1 x SSC and 0.1% SDS at about 50°C; and~~
 - ~~(iv) a nucleic acid molecule which is degenerate with respect to the nucleic acid molecules mentioned in (iii); and~~
- (c) a targeting module which is covalently linked to the processing module and which specifically binds to the surface of a cell, thereby mediating internalization of the fusion protein into the cell.

37. (Currently Amended) The nucleic acid molecule of claim 36, wherein the effector module comprises ~~one of~~ a mistletoe lectin A ~~and a fragment thereof~~.

38.-47. (Cancelled)

48. (Currently Amended) The nucleic acid molecule of claim ~~47~~ 16, wherein the mistletoe lectin B chain has an amino acid substitution ~~exchange is~~ selected from the group consisting of an amino acid substitution of S at position Y68, substitution of S at position Y70, substitution of S at position Y75, and substitution of S at position F79.

49. (New) The nucleic acid molecule of claim 1, wherein the targeting module is MHC II.

50. (New) The nucleic acid molecule of claim 1, wherein the processing module comprises bFGF.

51. (New) The nucleic acid molecule of claim 1, wherein the fusion protein is selected from the group consisting of bFGF-MLA and bFGF-MLA coupled to rMLB.